

Claims

1. A night vision system for vehicles, having at least two night vision capable cameras that are fitted on the vehicle at a spacing from one another in such a way that a stereoscopic recording is made of the driving path situated in front of the vehicle, and having means which condition the image signals of the night vision capable cameras and reproduce them optically for the driver, characterized in that means are present that generate for the driver a stereoscopic reproduction of the image signals.

2. The night vision system as claimed in claim 1, characterized in that the means for generating a stereoscopic reproduction project image components from various night vision capable cameras in different spatial directions.

3. The night vision system as claimed in claim 1 or 2, characterized in that the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of optical diffraction (for example diffractive optical elements, gratings, holographic elements).

4. The night vision system as claimed in claim 1, 2 or 3, characterized in that the means for generating a stereoscopic reproduction have elements that project image components in different spatial directions by means of optical refraction (for example arrays of longitudinal prisms, microlens arrangements, cylindrical lens arrays or field lenses).

5. The night vision system as claimed in one of claims 1 to 4, characterized in that the means for generating a stereoscopic

reproduction have elements that project image components in different spatial directions by means of reflection (for example retroreflectors, partially reflecting elements).

6. The night vision system as claimed in one of claims 1 to 5, characterized in that the means for generating a stereoscopic reproduction have elements that separate image components optically by means of exclusion (for example barrier grid, color mask) or covering (for example polarization filter).

7. The night vision system as claimed in one of claims 1 to 6, characterized in that the means for generating a stereoscopic reproduction have elements that separate image components optically as a function of time.

8. The night vision system as claimed in one of claims 1 to 7, characterized in that the means for generating a stereoscopic reproduction have elements that illuminate image reproduction displays (for example LCD displays) in a structured fashion (parallax illumination).

9. The night vision system as claimed in one of claims 1 to 8, characterized in that the means for generating a stereoscopic reproduction have scanning laser systems and electrooptic modulators.

10. The night vision system as claimed in one of claims 1 to 9 characterized in that the means for generating a stereoscopic reproduction have at least two projectors that emit image components in an angularly selective fashion.

11. The night vision system as claimed in one of claims 1 to 10,

characterized in that the means for generating a stereoscopic reproduction have elements (for example lasers, edge-emitting LEDs) that project image components directly onto the driver's retina.

12. The night vision system as claimed in one of claims 1 to 11, characterized in that means are present which detect the head and/or eye position or direction of view of the driver and drive the means for generating a stereoscopic reproduction as a function of the detected head and/or eye position or direction of view.

13. The night vision system as claimed in claim 12, characterized in that the head and/or eye position or direction of view of the driver is detected via cameras, ultrasound or infrared detectors fitted in the interior of the vehicle.

14. The night vision system as claimed in claim 12 or 13, characterized in that the means for generating a stereoscopic reproduction are driven in such a way that a movement parallax results.

15. The night vision system as claimed in claim 1, characterized in that the means for generating a stereoscopic reproduction have elements that are worn by the driver (for example polarization or color filter spectacles, mini displays, etc.).

16. The night vision system as claimed in claim 1, characterized in that the means for generating a stereoscopic reproduction have swinging or rotating displays.

17. The night vision system as claimed in claim 1, characterized

in that the means for generating a stereoscopic reproduction have volumetric displays in which individual spatial points are excited to emit light by means of laser radiation, for example.

18. The night vision system as claimed in one of claims 1 to 17, characterized in that the conditioning of the image signals of the night vision capable cameras includes the detection and optical accentuation of objects in the driving direction.

19. The night vision system as claimed in claim 18, characterized in that the optical accentuation of the objects is performed by marking (for example coloring, contrasting, flashing).

20. The night vision system as claimed in claim 18 or 19, characterized in that the optical accentuation of the objects is performed by varying the apparent position (for example distance) in the stereoscopic reproduction.

21. The night vision system as claimed in one of claims 1 to 20, characterized in that in addition to the three-dimensional reproduction image components are also reproduced in a two-dimensional display.

22. The night vision system as claimed in claim 21, characterized in that the driving control parameters (speed, rotational speed etc) and/or navigation information (for example GPS) are reproduced as image components in a two-dimensional display.